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Washington Basin Outlook Report January 1, 1998



Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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Washington Water Supply Outlook

January 1998

General Outlook

Washington started off the water-year with below average snowpack accumulation. Above normal early season precipitation carried the state through a dry November and December to end the calendar year with near average rainfall. January 1 snowpack is much below the near record breaking amounts of last year; but not so bad as compared to the average to cause concern. The first week of January has brought considerable snowfall to the mountains of Washington, raising our averages on a daily basis.

Snowpack

The January 1 statewide SNOTEL readings remained below average at 79%; but had increased to 95% of average by January 8. Snowpack varied from below, to much below, the average throughout the state, with the Nooksack River Basin SNOTEL reporting the lowest reading with only 46% of average. White River Basin had the highest at 85% of average. Westside averages from SNOTEL, and January 1 snow surveys, included the North Puget Sound river basins with 76% of average, the Olympic Peninsula basins with 62%, and the Lewis-Cowlitz basins with 78% of average. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 73%, and the Wenatchee area with 78%. Snowpack in the Spokane River Basin was at 56%, and the Pend Oreille River Basin, including Canadian data, had 67% of average. Maximum snow cover in Washington was at Lyman Lake SNOTEL in the Central Cascade Mountains, with a water content of 26.4 inches. This site would normally have 25.4 inches of water content on January 1. Last year at this time Lyman Lake had 42.9 inches of snow water. The highest average in the state was Spirit Lake SNOTEL near Mount Saint Helens with 172% of average.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	26	56
Newman Lake	32	79
Pend Oreille	34	67
Okanogan	46	75
Methow	46	90
Similkameen	33	51
Wenatchee	38	80
Chelan	50	95
Stemilt Creek	76	75
Yakima	34	81
Ahtanum Creek	27	55
Walla Walla	25	64
Cowlitz	39	84
Lewis	24	71
White	43	99
Green	29	76
Cedar	25	82
Snoqualmie	33	65
Skykomish	35	72
Skagit	56	97
Baker	35	84
Nooksack	31	46
Olympic Peninsula	35	62

Precipitation

During the month of December, the National Weather Service and Natural Resources Conservation Service climate stations showed below average precipitation for all basins in Washington. The highest percent of average in the state was at Chewelah. Chewelah reported 137% of average for a total of 4.2 inches. The average for this site is 3 inches for December. Averages for the water year varied from 111% of average in the Cowlitz - Lewis Basin to 78% of average in the Spokane and Walla Walla river basins. The highest individual site average for the water year was 135% of average at Sheep Canyon SNOTEL site near Cougar, Washington.

RIVER BASIN	DECEMBER PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	49	78
Colville-Pend Oreille	53	80
Okanogan-Methow	51	81
Wenatchee-Chelan	65	97
Yakima	67	102
Walla Walla	57	78
Cowlitz-Lewis	75	111
White-Green	81	90
Central Puget Sound	83	99
North Puget Sound	94	100
Olympic Peninsula	74	105

Reservoir

Early season reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for winter collection. Reservoir storage in the Yakima Basin was 728,300 acre feet, or 125% of average. Storage at other reservoirs included Roosevelt at 88% of average and 77% of capacity, Banks Lake at 111% of average and 96% of capacity, and the Okanogan reservoirs with 142% of average for January 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 58,800 acre feet, or 44% of average and 24% of capacity; Chelan Lake, 469,500 acre feet, 124% of average and 69% of capacity; and Ross Lake at 148% of average and 82% of capacity. West-side reservoir storage includes Swift Reservoir, near Cougar, at 46% of average change for December.

BASIN	PERCENT OF CAPACITY	PERCENT OF AVERAGE
Spokane	24	44
Colville-Pend Oreille	79	91
Okanogan-Methow	81	142
Wenatchee-Chelan	69	124
Yakima	68	125
North Puget Sound	82	148

For more information contact your local Natural Resources Conservation Service office.

Streamflow

Most streams in the state are forecasted for near normal flows this summer. They vary from 100% of average for the Klickitat River near Gleanwood, to 57% of average for the Rex River near Cedar Falls. January forecasts for some Western Washington streams include: Cedar River near Cedar Falls, 68%; Green River, 80%; and the Dungeness River, 90%. Some Eastern Washington streams include the Yakima River near Parker, 85%; the Wenatchee River at Peshastin, 88%; and the Colville River at Kettle Falls, 66%. Volumetric forecasts are developed using current, historic, and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

December reported streamflows varied from well above to well below average. The Kettle River at Laurier, had the highest flows at 172% of average; and the Similkameen River at Nighthawk, with 56% of average, had the lowest in the state. Other streamflows were the following percentage of average: the Priest River, 89%; the Columbia at the International Boundary, 98%; the Spokane at Spokane, 76%; the Columbia below Rock Island Dam, 98%; the Cle Elum River near Roslyn, 53%; and the Snake River below Ice Harbor Dam, 75%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
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Spokane	70
Colville-Pend Oreille	66-98
Okanogan-Methow	84-96
Wenatchee-Chelan	78-94
Yakima	81-100
Walla Walla	77-86
Cowlitz-Lewis	90-100
Green River	80
Central Puget Sound	57-75
North Puget Sound	85-90
Olympic Peninsula	80-90

STREAM	PERCENT OF AVERAGE DECEMBER STREAMFLOWS
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Pend Oreille Below Box Canyon	79
Kettle at Laurier	172
Columbia at Birchbank	110
Spokane at Long Lake	78
Similkameen at Nighthawk	56
Okanogan at Tonasket	128
Methow at Pateros	111
Chelan at Chelan	90
Wenatchee at Pashastin	74
Yakima at Cle Elum	62
Yakima at Parker	65
Naches at Naches	75
Yakima at Kiona	97
Grande Ronde at Troy	64
Snake below Lower Granite Dam	93
SF Walla Walla near Milton Freewater	74
Columbia at The Dalles	94
Lewis at Ariel	73
Cowlitz below Mayfield Dam	68
Skagit at Concrete	63

For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

JANUARY 1998

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
AITANUM R.S.	3100	1/07/97	18	4.7	8.7	3.5	MISSION PASS CAN.	5800	1/01/97	24	5.7	---	8.9
ALPINE MEADOWS PILL	3500	1/01/97	---	13.2S	33.1	17.9	MONASHEE PASS CAN.	4200	1/03/97	24	4.3	---	6.4
ASHLEY DIVIDE	4820	12/31/96	9	1.5	6.6	3.4	MOOSE CREEK PILL	6200	1/01/97	---	5.4	16.4	7.1
BADGER PASS PILL	6900	1/01/97	---	10.7	23.4	14.2	MORRISSEY RIDGE CAN.	6100	1/01/97	---	7.8	---	15.4
BARKER LAKES PILL	8250	1/01/97	---	5.0	10.7	6.8	MORSE LAKE PILL	5400	1/01/97	---	21.0S	51.7	19.1
BARNES CREEK CAN.	4950	1/03/97	35	7.5	---	9.5	MOSES MTN PILL	4800	1/01/97	---	3.6S	12.7	6.5
BASIN CREEK PILL	7180	1/01/97	---	4.6	5.2	3.6	MOSQUITO RDG PILL	5200	1/01/97	---	9.6	32.3	15.7
BASSO PEAR	5150	12/30/96	11	1.8	12.0	---	MOUNT CRAG PILL	4050	1/01/97	---	7.0S	20.1	11.3
BERNE-MILL CREEK (d)	3170	12/30/96	28	7.9	27.0	11.2	MT. KOBAN CAN.	5500	12/30/96	12	2.5	10.3	6.2
BIG WHITE MTN CAN.	5100	1/01/97	28	6.3	12.8	7.8	MT. GARDNER PILL	2860	1/01/97	---	4.7S	18.1	5.8
BLACK PINE PILL	7100	1/01/97	---	2.7	9.4	4.9	N.F. ELK CR PILL	6250	1/01/97	---	3.7	10.3	4.6
BLACKWALL PEAK CAN.	6370	1/01/97	---	11.5	---	14.8	NEVADA CREEK PILL	6480	1/01/97	---	4.2	11.6	5.7
BLEWETT PASS#2PILL	4270	1/01/97	---	4.6S	18.0	8.3	NEZ PERCE CMP PILL	5650	1/01/97	---	5.0	12.2	5.7
BRENDIA MINE CAN.	4450	1/01/97	---	4.6	12.0	5.9	NOISY BASIN PILL	6040	1/01/97	---	13.4	36.6	17.2
BUMPING LAKE (NEW)	3400	12/30/96	18	3.8	20.1	7.5	OLALLIE MDWS PILL	3960	1/01/97	---	14.6S	45.0	20.3
BUMPING RIDGE PILL	4600	1/01/97	---	8.6S	29.5	9.6	OLALLIE MEADOWS	3630	1/01/97	---	13.1E	41.2	18.2
BUNCHGRASS MDWPILL	5000	1/01/97	---	9.7	26.2	10.9	OPHIR PARK	7150	12/28/96	18	3.8	11.7	7.0
CAYUSE PASS	5300	1/01/97	---	29.2E	67.6	32.4	PARADISE PARK PILL	5500	1/01/97	---	21.5S	54.1	23.6
CHESSMAN RESERVOIR	6200	12/31/96	0	.0	2.8	1.5	PARK CR RIDGE PILL	4600	1/01/97	---	16.1S	39.3	18.4
CHITWAURUM G.S.	2500	12/30/96	14	4.0	11.1	4.8	PETERSON MDW PILL	7200	12/29/96	---	3.8	7.6	4.2
COMBINATION PILL	5600	1/01/97	---	1.7	5.3	2.3	PIGTAIL PEAK PILL	5900	1/01/97	---	15.8S	45.6	20.1
COPPER BOTTOM PILL	5200	1/01/97	---	1.9	12.2	4.7	PIKE CREEK PILL	5930	1/01/97	---	7.5	22.8	11.4
CORRAL PASS PILL	6000	1/01/97	---	14.2S	31.1	13.5	PIPESTONE PASS	7200	12/31/96	8	2.0	4.8	2.1
COTTONWOOD CREEK	6400						POPE RIDGE PILL	3540	1/01/97	---	5.6S	20.7	9.1
COUGAR MTN. PILL	3200	1/01/97	---	5.0S	22.1	8.3	POTATO HILL PILL	4500	1/01/97	---	9.1S	24.6	10.5
COYOTE HILL	4200	12/30/96	11	2.0	10.8	4.1	QUARTZ PEAK PILL	4700	1/01/97	---	6.7	21.0	8.5
DALY CREEK PILL	5780	1/01/97	---	4.3	10.7	5.3	RAGGED MOUNTAIN	4200	1/01/97	23	7.6	22.7	9.0
DISCOVERY BASIN	7050	12/29/96	16	2.7	8.9	4.4	RAINY PASS PILL	4780	1/01/97	---	13.7S	29.5	15.4
DIX HILL	6400	12/28/96	12	2.2	9.8	5.0	REX RIVER PILL	1900	1/01/97	---	8.1S	26.6	10.5
DOMMERIE FLATS	2200	12/31/96	0	.0	9.4	3.9	ROCKER PEAK PILL	8000	1/01/97	---	5.3	10.2	6.4
EAST RAGGED SADDLE	3740	1/01/97	23	7.1	22.2	9.9	ROCKY CREEK AM	2100	1/01/97	---	9.3e	34.0	11.7
EASY PASS AM	5200	1/01/97	---	36.0e	70.0	27.1	SF THUNDER CR AM	2200	1/01/97	---	2.2e	16.0	4.5
ELBOW LAKE PILL	3200	1/01/97	---	9.4S	31.4	19.4	SADDLE MTN PILL	7900	1/01/97	---	9.5	21.4	11.1
EMERY CREEK PILL	4350	1/01/97	---	3.8	14.7	7.2	SALMON MDWS PILL	4500	1/01/97	---	2.5	12.4	3.9
ENDERBY CAN.	5800	12/31/96	61	15.7	25.6	18.7	SASSE RIDGE PILL	4200	1/01/97	---	10.3S	32.7	12.4
FARRON CAN.	3700	12/29/96	11	1.6	---	7.0	SAVAGE PASS PILL	6170	1/01/97	---	9.3	24.9	11.0
FISH LAKE	3370	12/30/96	40	10.6	24.7	10.7	SAWMILL RIDGE	4700	01/03/97	41	11.7	33.0	13.3
FISH LAKE PILL	3370	1/01/97	---	10.6S	30.5	12.4	SCHREIBERS MDW AM	3400	1/01/97	---	10.6e	42.0	21.9
FLATTOP MTN PILL	6300	1/01/97	---	14.4	33.3	21.0	SHEEP CANYON PILL	4050	1/01/97	---	8.6S	23.0	15.2
FOURTH OF JULY SUM	3200	12/30/96	8	2.2	13.2	3.4	SILVER STAR MTN CAN.	5600	1/01/97	38	9.6	22.2	13.3
FROHNER MDWS PILL	6480	1/01/97	---	1.9	6.1	3.4	SKALKAHO PILL	7260	1/01/97	---	8.1	21.1	9.8
GRASS MOUNTAIN #2	2900	01/03/97	4	.5	17.8	4.8	SKOOKUM CREEK PILL	3920	1/01/97	---	6.8S	21.2	19.0
GRAVE CREEK	4300					7.5	SPENCER MDW PILL	3400	1/01/97	---	9.2S	33.7	9.4
GRAVE CRK PILL	4300	1/01/97	---	4.4	14.4	7.7	SPIRIT LAKE PILL	3100	1/01/97	---	3.1S	8.2	1.8
GREEN LAKE PILL	6000	1/01/97	---	6.1S	25.8	9.0	SPOTTED BEAR MTN.	7000	12/31/96	16	3.0	11.3	6.6
GREYBACK RES CAN.	4700	12/30/96	13	2.2	7.0	4.4	STAHL PEAK PILL	6030	1/01/97	---	12.2	26.4	16.0
GRIFFIN CR DIVIDE	5150	12/30/96	10	1.2	12.2	---	STAMEDEE PASS PILL	3860	1/01/97	---	12.4S	41.5	16.7
GROUSE CAMP PILL	5380	1/01/97	---	4.6S	17.6	8.9	STEVENS PASS PILL	4070	1/01/97	---	12.2S	32.6	15.3
HAND CREEK PILL	5030	1/01/97	---	3.7	12.4	5.5	STEVENS PASS SAND SD	3700	12/30/96	32	9.0	31.9	14.6
HARTS PASS PILL	6500	1/01/97	---	17.1S	29.9	17.9	STORM LAKE	7780	12/29/96	23	5.4	9.3	5.4
HELL ROARING DIVIDE	5770	12/29/96	34	6.5	21.1	13.0	STUART MOUNTAIN	7400	12/31/96	37	10.6	28.9	13.4
HIGH RIDGE PILL	4980	1/01/97	---	5.8S	23.9	9.7	SUMMERLAND RES CAN.	5050	1/02/97	16	2.5	7.2	4.4
HOLBROOK	4530	12/31/96	2	.3	9.0	4.0	SUNSET PILL	5540	1/01/97	---	4.4	25.3	15.8
HOODOO BASIN PILL	6050	1/01/97	---	12.3	40.6	19.0	SURPRISE LKS PILL	4250	1/01/97	---	12.6S	46.3	20.2
HUMBOLDT GLCH PILL	4250	1/01/97	---	1.1	15.4	5.6	TEN MILE LOWER	6600	12/31/96	8	1.0	5.6	3.0
ISINTOK LAKE CAN.	5100	1/02/97	10	1.6	5.2	3.3	TEN MILE MIDDLE	6800	12/31/96	12	2.6	7.0	4.7
JUNE LAKE PILL	3200	1/01/97	---	6.0S	37.6	11.5	TINKHAM CREEK PILL	3000	1/01/97	---	8.4S	29.5	7.6
KRAFT CREEK PILL	4750	1/01/97	---	4.3	15.5	6.6	TOUCHET #2 PILL	5530	1/01/97	---	8.7	33.3	12.9
LESTER CREEK	3100	01/03/97	26	7.2	21.4	8.0	TRINKUS LAKE	6100	12/31/96	40	10.4	36.0	18.7
LOLO PASS PILL	5240	1/01/97	---	8.5	25.9	12.6	TROUGH #2 PILL	5310	1/01/97	---	4.1S	10.3	4.9
LONE PINE PILL	3800	1/01/97	---	10.1S	39.5	12.0	TRUMAN CREEK	4060	01/03/97	6	1.2	4.1	2.0
LOOKOUT PILL	5140	1/01/97	---	7.9	30.3	13.5	TUNNEL AVENUE	2450	12/31/96	19	5.0	17.4	8.1
LOST HORSE PILL	5000	1/01/97	---	4.4S	22.5	15.3	TV MOUNTAIN	6800	12/31/96	19	5.8	18.0	7.2
LOST LAKE PILL	6110	1/01/97	---	15.4	48.8	25.8	TWELVEMILE PILL	5600	1/01/97	---	6.5	17.2	7.2
LUBRECHT FOREST NO 3	5450	12/29/96	6	1.3	7.0	2.6	TWIN CAMP	4100	01/03/97	27	7.2	25.1	10.0
LUBRECHT FOREST NO 4	4650	12/29/96	2	.5	5.4	1.4	TWIN LAKES PILL	6400	1/01/97	---	14.5	31.4	16.3
LUBRECHT FOREST NO 6	4040	12/29/96	1	.4	6.4	1.6	TWIN SPIRIT DIVIDE	3480	1/01/97	16	4.0	17.0	6.8
LUBRECHT HYDROPLT	4200	12/29/96	5	1.2	7.1	2.8	UPPER HOLLAND LAKE	6200	12/31/96	41	11.8	25.4	15.8
LUBRECHT PILL	4680	1/01/97	---	1.9	6.9	2.4	UPPER WHEELER PILL	4400	1/01/97	---	4.4S	5.8	5.9
LYMAN LAKE PILL	5900	1/01/97	---	26.4S	42.9	25.4	WARM SPRINGS PILL	7800	1/01/97	---	8.6	14.8	9.4
LYNN LAKE	4000	01/03/97	27	7.9	16.6	7.6	WATSON LAKES AM	4500	1/01/97	---	16.9e	53.0	24.2
MARIAS PASS	5250	12/31/96	16	3.9	16.2	6.7	WEASEL DIVIDE	5450	01/02/97	42	9.7	25.3	15.3
MEADOWS PASS PILL	3240	1/01/97	---	6.3S	34.2	9.5	WELLS CREEK PILL	4200	1/01/97	---	8.6S	27.3	20.0
MERRITT	2140	12/30/96	10	2.8	18.2	7.1	WHITE PASS ES PILL	4500	1/01/97	---	5.8S	---	9.8
MICA CREEK PILL	4750	1/01/97	---	5.6	28.7	---							
MISSEZULA MTN CAN.	4700	1/02/97	17	2.6	7.8	5.1							

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Local lvl: 4 Operator: 00 Entrd: 900724 Used: 980122
Type: y Enc lvl: Acq stat: 4 Acq method: p Lang: eng
Comp: 0 Gen ret: 8 Spec ret: Com/cop: 0 MBR:
Lend: Repro: Cancel: Copies: 001 UPD:
004 0398-51760
010 sn90-20374
035 0042-53630
070 IN PROCESS 900713-GT7
245 00 Basin outlook reports and federal-state-private cooperative
snow surveys.
246 13 Basin outlook reports
780 \t Washington water supply outlook and federal-state-private
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/HELP.....General help HELP...About this screenAny command or /?
NS
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RECORD
YOU CHOSE: Basin outlook reports (2/3)

1. 853 6 8 \a(year)\u12\vr\j(mo)\wm\x01
2. 863 6 8.1 \a 1990 \j 06
3. 863 6 8.2 1991-1992 \j 01-06
4. 863 6 8.3 1993 \j 01-03
5. 863 6 8.4 1993 \j 05
6. 863 6 8.8 1996 \j 02-06
7. 863 6 8.9 1997 \j 01-04
8. 863 6 8.10 1998 \j 01
9. 993 STA*10/90t1
10. 994 OCLC# 21632534
11. 994 VC# 60048

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PS.....Previous screen H.....Periodicals owned
/HELP.....General help HELP...About this screenAny command or /?



Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Contact List

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:

<http://wcp.wsu.edu/nrcs/CoopSnoSrvy.htm>

Oregon:

<http://crystal.or.nrcs.usda.gov/snows-surveys/>

Idaho:

<http://id.nrcs.usda.gov/snow/snow.htm>

National Water and Climate Center (NWCC):

<http://www.wcc.nrcs.usda.gov/>

NWCC Anonymous FTP Server:

<ftp.wcc.nrcs.usda.gov>

USDA-NRCS Agency Homepages

Washington:

<http://wcp.wsu.edu/nrcs/>

NRCS National:

<http://www.ftw.nrcs.usda.gov/>

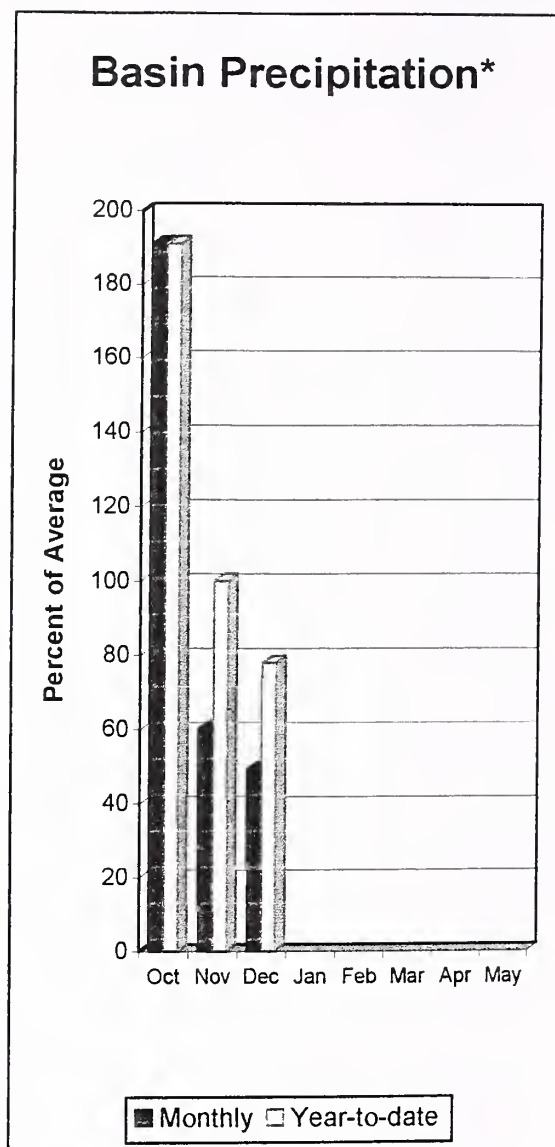
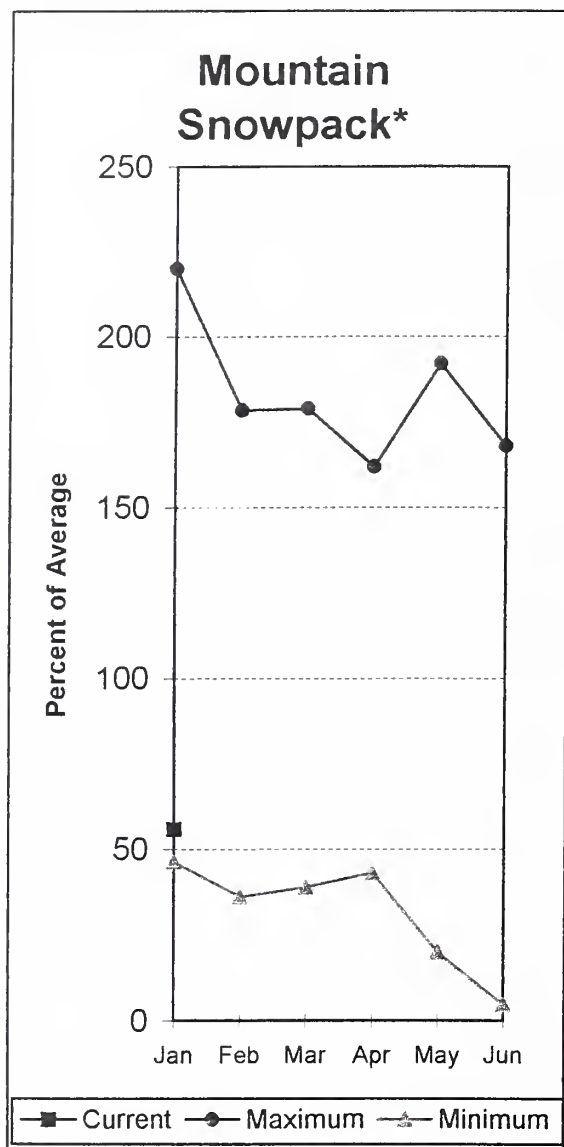
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
WASHINGTON STATE OFFICE, SPOKANE



NRCS SNOTEL Sites Washington 1998

0 2 10 20 MILES
0 2 10 20 KILOMETERS

Spokane River Basin



*Based on selected stations

The January 1 forecasts for summer runoff within the Spokane River Basin are 70% of average near Post Falls and 70% of average at Long Lake. The forecast is based on a basin snowpack that is 56% of average and precipitation that is 78% of average for the water year. Precipitation for December was much below normal at 49% of average. Streamflow on the Spokane River at Long Lake, was 78% of average for December. January 1 storage in Coeur d'Alene Lake, was 56,800 acre feet, 44% of average, and 24% of capacity. Snowpack at Quartz Peak SNOTEL site contained 6.7 inches of water, compared to the average January 1 reading of 8.5 inches. Average temperatures in the Spokane basin were 3 degrees above normal.

For more information contact your local Natural Resources Conservation Service office.

Spokane River Basin

Streamflow Forecasts - January 1, 1998

SPOKANE near Post Falls (2)	APR-SEP	1107	1585	1910	70	2235	2713	2730
	APR-JUL	1060	1527	1845	70	2163	2630	2633
SPOKANE at Long Lake	APR-JUL	1210	1696	2026	69	2356	2842	2936
	APR-SEP	1367	1871	2214	70	2557	3061	3159

SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
COEUR D'ALENE	238.5	56.8	93.5	130.5

SPOKANE RIVER BASIN Watershed Snowpack Analysis - January 1, 1998

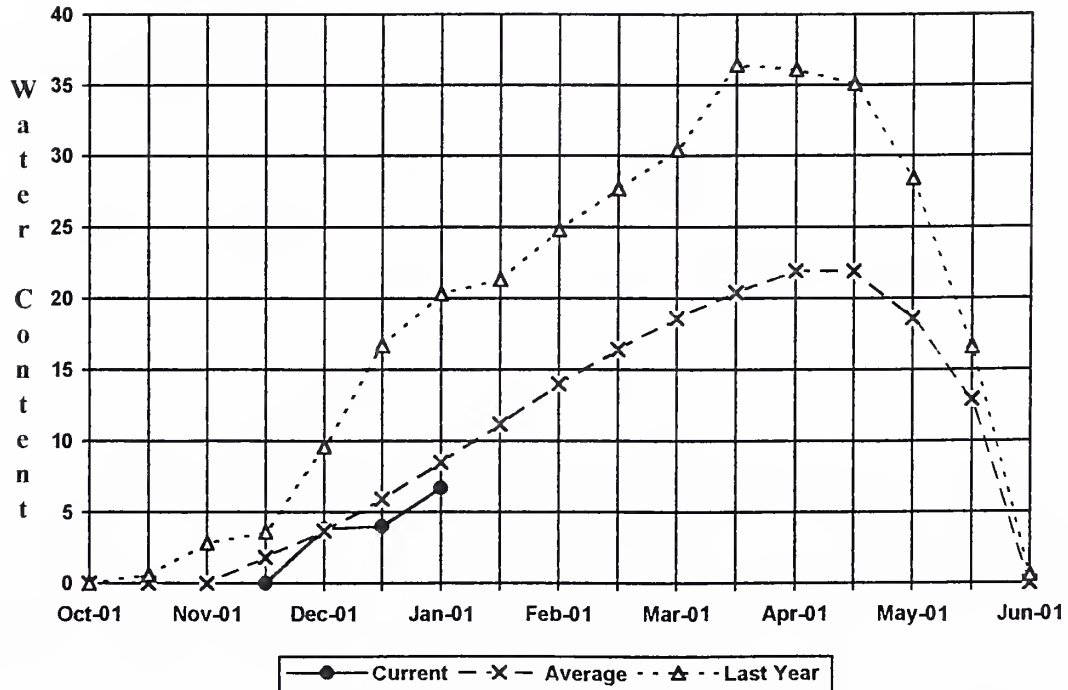
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
SPOKANE RIVER	10	26	56
NEWMAN LAKE	1	32	79

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

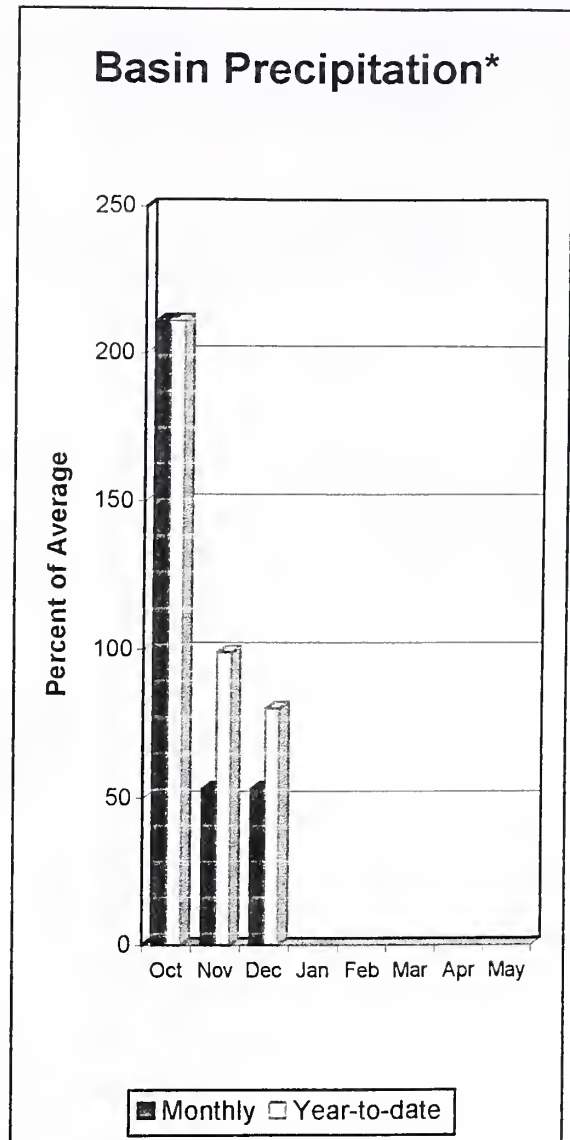
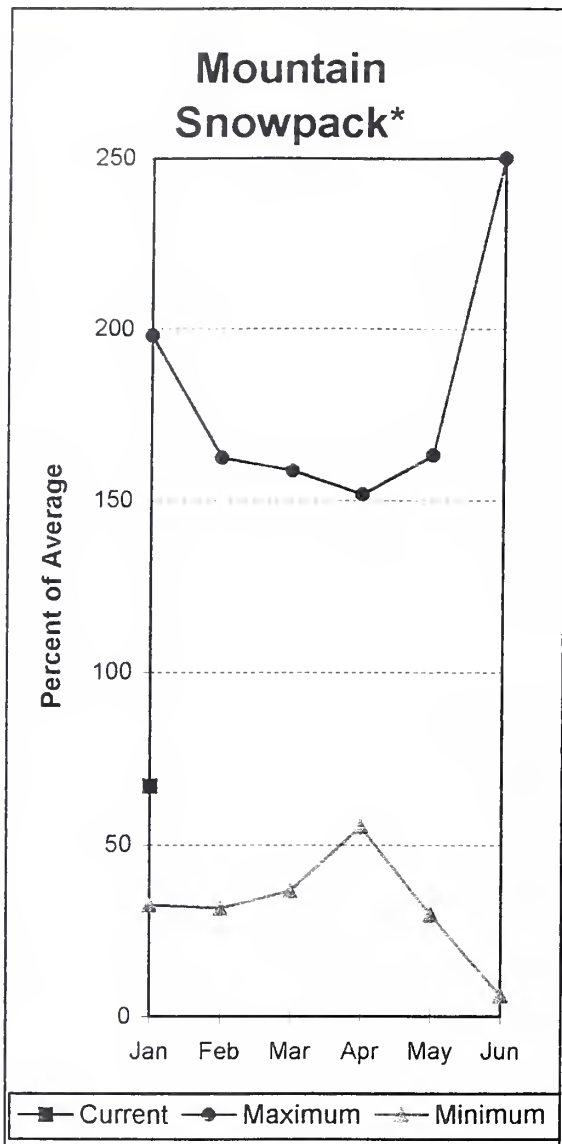
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Quartz Peak SNOTEL Elevation 4700 ft.



Colville - Pend Oreille River Basins



*Based on selected stations

The forecast for the Kettle River streamflow is 98% of average; the Pend Oreille below Box Canyon, 75%; and the Priest River near the town of Priest River, 81% of average for the summer runoff period. December streamflow was 79% of average on the Pend Oreille River; 98% on the Columbia at the International Boundary; and 172% on the Kettle River. January 1 snow cover was 67% of average in the Pend Oreille Basin and 81% of average in the Kettle River Basin. Precipitation during December was 53% of average, bringing the year-to-date precipitation to 80% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 91% of average and 79% of capacity on January 1. Average temperatures were 3-6 degrees above normal.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - January 1, 1998

		<<----- Drier ----- Future Conditions ----- Wetter ----->>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
PEND OREILLE Lake Inflow (1,2)	APR-JUL	4417	8119	9800	75	11481	15183	13150
	APR-SEP	4813	8861	10700	75	12539	16587	14370
	APR-JUN	3459	6953	8540	75	10127	13621	11390
PRIEST nr Priest River (1,2)	APR-JUL	346	559	655	81	751	964	814
	APR-SEP	371	597	700	81	803	1029	868
PEND OREILLE b1 Box Canyon (1,2)	APR-JUL	5243	8446	9900	74	11354	14557	13380
	APR-SEP	5817	9313	10900	75	12487	15983	14590
	APR-JUN	4673	7429	8680	75	9931	12687	11570
CHAMOKANE CREEK near Long Lake	MAY-AUG	1.65	4.71	6.80	80	8.89	11.95	8.52
COLVILLE at Kettle Falls	APR-SEP	33	65	86	66	107	139	131
	APR-JUL	27	57	77	64	97	127	120
	APR-JUN	25	52	70	63	88	115	111
KETTLE near Laurier	APR-SEP	1409	1648	1810	98	1972	2211	1854
	APR-JUL	1326	1550	1703	97	1856	2080	1761
	APR-JUN	1195	1401	1540	97	1679	1885	1585

COLVILLE - PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
ROOSEVELT	5232.0	4008.6	3960.7	4547.9
BANKS	715.0	684.5	680.2	618.3

COLVILLE - PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - January 1, 1998

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
COLVILLE RIVER	0	0	0
PEND OREILLE RIVER	60	34	67
KETTLE RIVER	1	49	81

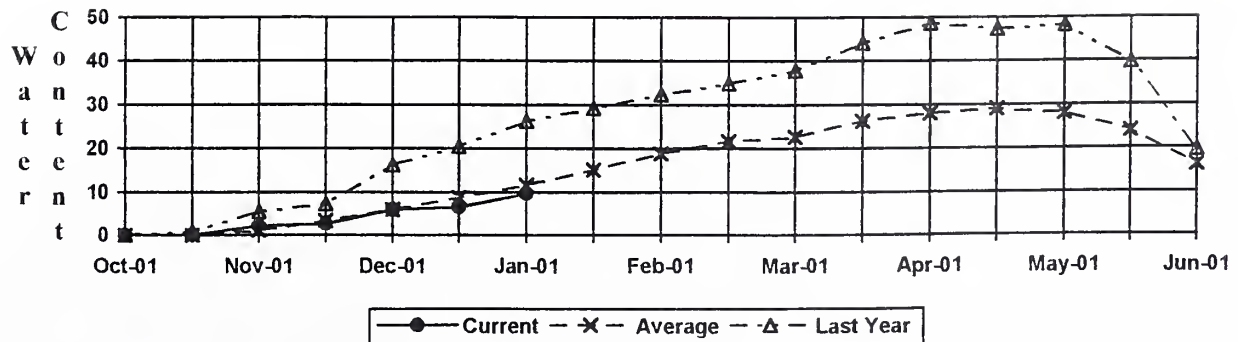
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The average is computed for the 1961-1990 base period.

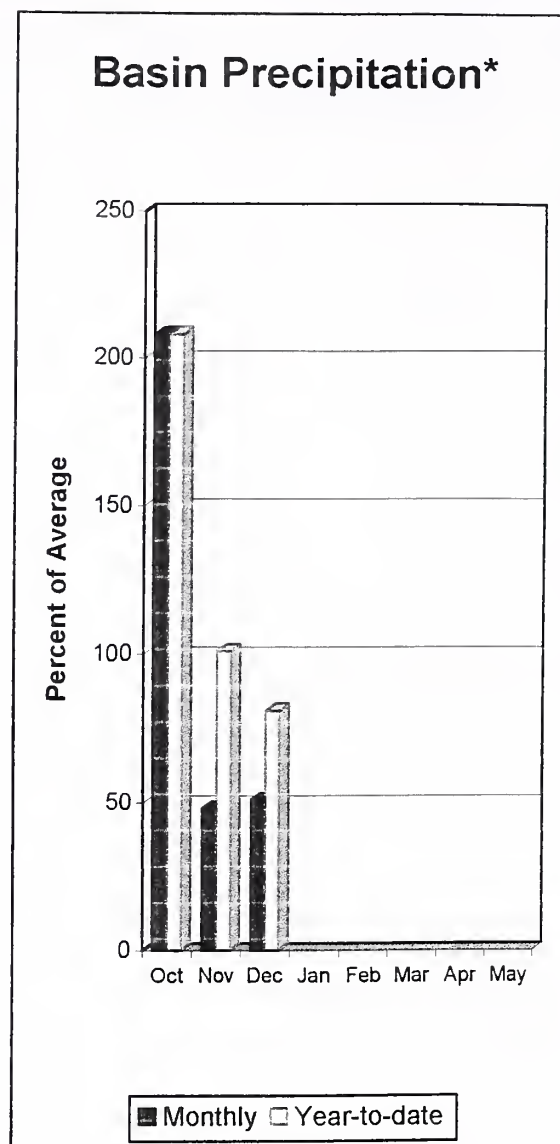
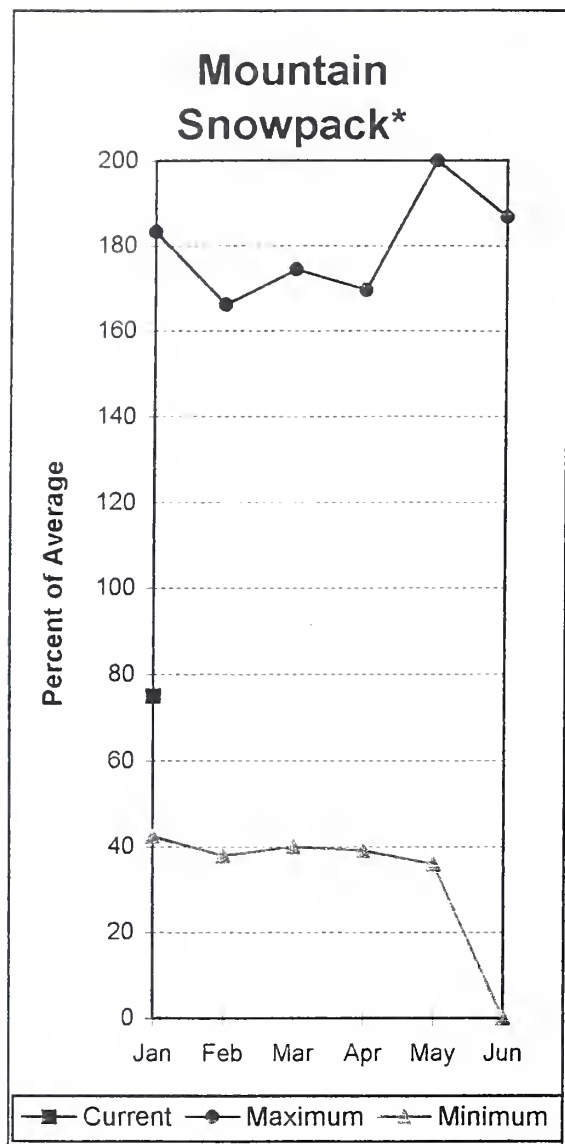
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Bunchgrass Meadow SNOTEL Elevation 5000 ft.



Okanogan - Methow River Basins



*Based on selected stations

Summer runoff forecast for the Okanogan River is 84% of average; the Similkameen River, 87%; the Methow River, 96%; and Salmon Creek, 95% of average. January 1 snow cover on the Okanogan was 75% of average; the Methow, 90%; and the Similkameen River, 51%. Salmon Meadows SNOTEL site above Conconully Lake had a January 1 reading of 64% of average. December precipitation in the Okanogan-Methow was 51% of average, with precipitation for the water year at 81% of average. December streamflow for the Methow River was 111% of average; 128% for the Okanogan River; and 56% for the Similkameen. Snow-water-content at the Salmon Meadows SNOTEL, near Conconully, was 2.5 inches. Average for this site is 3.9 inches on January 1. Combined storage in the Conconully Reservoirs was 19,000 acre feet, which is 81% of capacity and 142% of the January 1 average.

For more information contact your local Natural Resources Conservation Service office.

Okanogan - Methow River Basins

Streamflow Forecasts - January 1, 1998

		<<===== Drier ===== Future Conditions ===== Wetter =====>>							
Forecast Point	Forecast Period	Chance Of Exceeding *				Chance Of Exceeding *			
		90%	70%	50% (Most Probable)		30%	10%	30-Yr Avg.	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)	
=====		=====		=====		=====		=====	
SIMILKAMEEN near Nighthawk (1)	APR-SEP	519	1001	1220	87	1439	1921	1399	
	APR-JUL	475	929	1135	87	1341	1795	1304	
	APR-JUN	449	807	970	87	1133	1491	1113	
OKANOGAN near Tonasket (1)	APR-SEP	483	1086	1360	84	1634	2237	1623	
	APR-JUL	428	980	1230	84	1480	2032	1466	
	APR-JUN	387	833	1035	84	1237	1683	1233	
SALMON CREEK near Conconully	APR-JUL	3.0	12.1	18.2	95	24	33	19.1	
	APR-SEP	3.3	12.7	19.0	95	25	35	20	
METHOW RIVER near Pateros	APR-SEP	591	775	900	96	1025	1209	942	
	APR-JUL	558	726	840	96	954	1122	873	
	APR-JUN	474	617	715	96	813	956	746	

OKANOGAN - METHOW RIVER BASINS Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
SALMON LAKE	10.5	8.6	8.1	7.5
CONCONULLY RESERVOIR	13.0	10.4	8.6	5.9

OKANOGAN - METHOW RIVER BASINS Watershed Snowpack Analysis - January 1, 1998

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
OKANOGAN RIVER	9	44	75
OMAK CREEK	1	28	55
SANPOIL RIVER	0	0	0
SIMILKAMEEN RIVER	1	33	51
CONCONULLY LAKE	1	20	64
METHOW RIVER	3	46	90

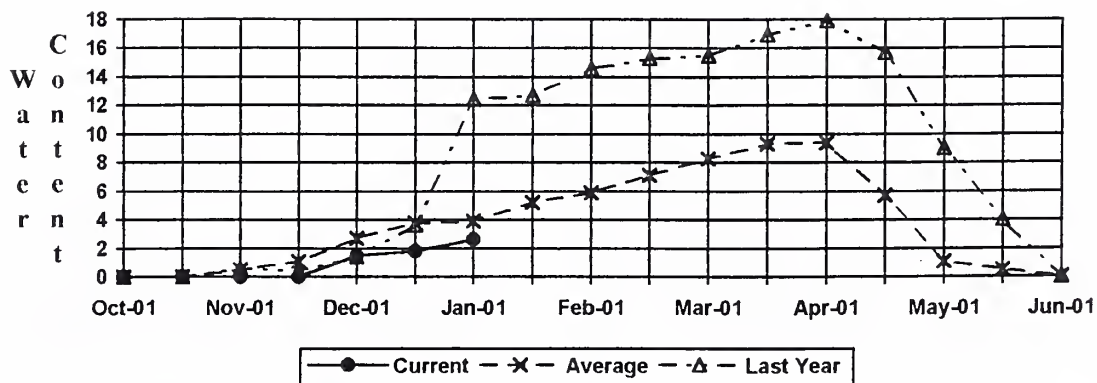
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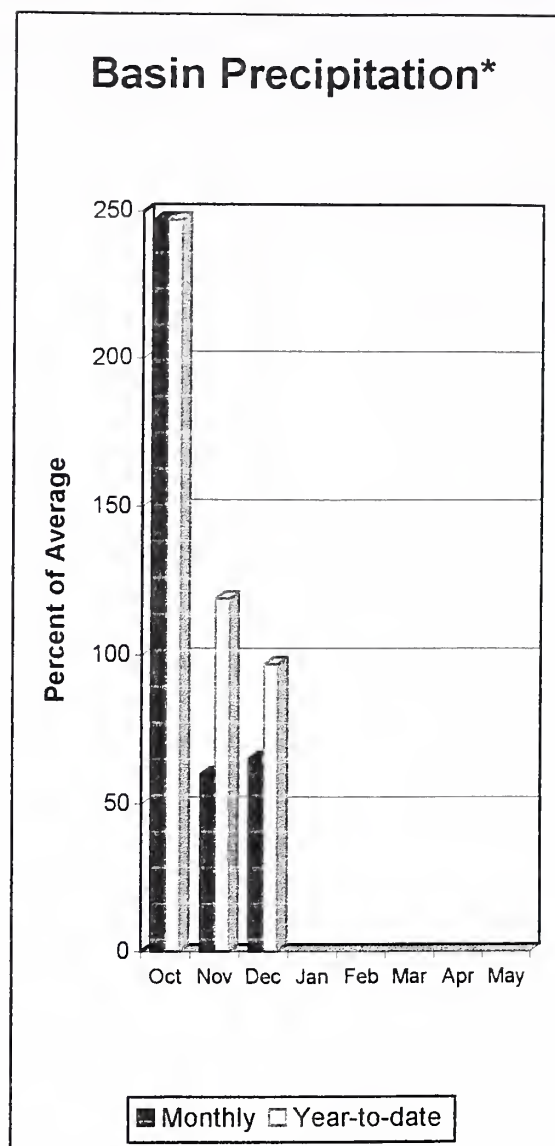
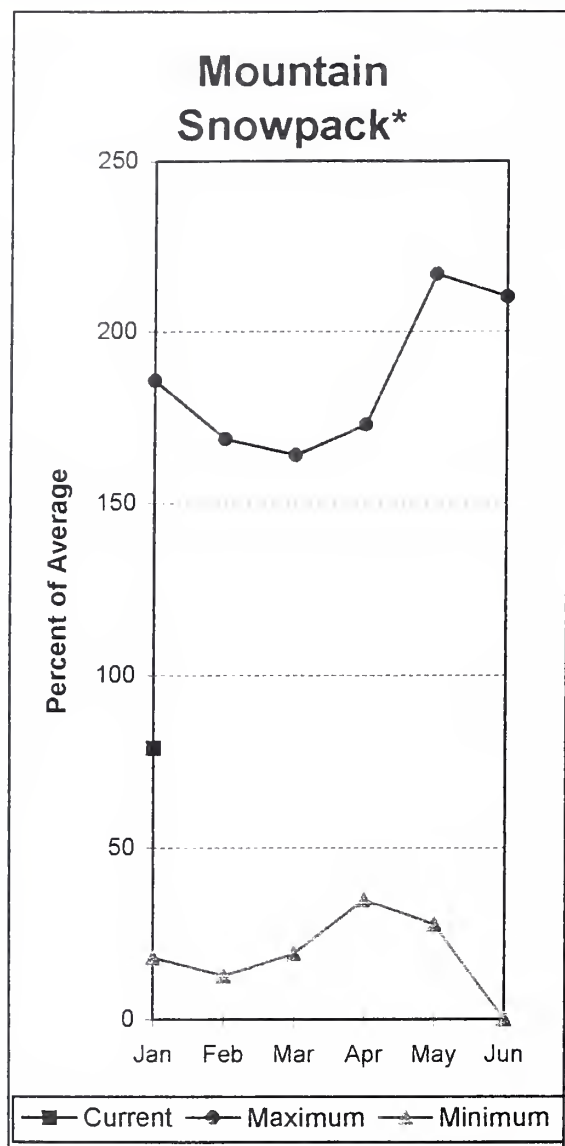
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Salmon Meadows SNOTEL Elevation 4500 ft.



Wenatchee - Chelan River Basins



*Based on selected stations

Precipitation during December was 65% of average in the basin and 97% for the year-to-date. Runoff for the Entiat River is forecast to be 78% of average for the summer. The April-September forecast for the Chelan River is for 87% of average; for the Wenatchee River it is 88%; and for the Stehekin it is 94% of average. Icicle, Stemilt and Squilchuck creeks are all expected to be much the same this summer. December streamflows on the Chelan River was 90% of average, and the Wenatchee River averaged 74% of normal flows. January 1 snowpack in the Wenatchee Basin was 80% of average. The Chelan Basin was 95% of average; Colockum Ridge was 84%; and Stemilt Creek was 75% of average. Snowpack in the Entiat River Basin was 62% of average. Reservoir storage in Lake Chelan was 469,500 acre feet, or 124% of January 1 average and 69% of capacity. Lyman Lake SNOTEL had the most snow water with 26.4 inches of water. This site would normally have 25.4 inches on January 1. Temperatures were slightly above normal for December.

For more information contact your local Natural Resources Conservation Service office.

Wenatchee - Chelan River Basins

Streamflow Forecasts - January 1, 1998

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		Chance Of Exceeding *		Chance Of Exceeding *		30-Yr Avg.		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)	
CHELAN RIVER near Chelan	APR-SEP	859	949	1010	87	1071	1161	1160
	APR-JUL	770	842	890	87	938	1010	1024
	APR-JUN	627	674	705	87	736	783	812
STEHEKIN near STEHEKIN	APR-SEP	668	735	780	94	825	892	827
	APR-JUL	587	630	660	94	690	733	701
	APR-JUN	471	490	503	94	516	535	539
ENTIAT RIVER near Ardenvoir	APR-SEP	105	148	177	78	206	249	227
	APR-JUL	94	133	160	78	187	226	206
	APR-JUN	80	110	131	78	152	182	169
WENATCHEE at Plain	APR-SEP	758	932	1050	88	1168	1342	1190
	APR-JUL	703	844	940	88	1036	1177	1072
	APR-JUN	588	691	760	88	829	932	864
WENATCHEE R. at Peshastin	APR-SEP	840	1197	1440	88	1683	2040	1636
	APR-JUL	769	1091	1310	88	1529	1851	1485
	APR-JUN	625	884	1060	88	1236	1495	1204
STEMILT nr Wenatchee (miners in)	MAY-SEP	64	93	113	82	133	162	139
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	41523	53477	61600	87	69723	81677	70485
	APR-JUL	35235	45337	52200	87	59063	69165	59735
	APR-JUN	27636	35534	40900	87	46266	54164	47007

WENATCHEE - CHELAN RIVER BASINS Reservoir Storage (1000 AF) - End of December					WENATCHEE - CHELAN RIVER BASINS Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CHELAN LAKE	676.1	469.5	374.5	378.7	CHELAN LAKE BASIN	3	50	95
					ENTIAT RIVER	1	27	62
					WENATCHEE RIVER	11	38	80
					SQUILCHUCK CREEK	0	0	0
					STEMILT CREEK	1	76	75
					COLOCKUM CREEK	1	40	84

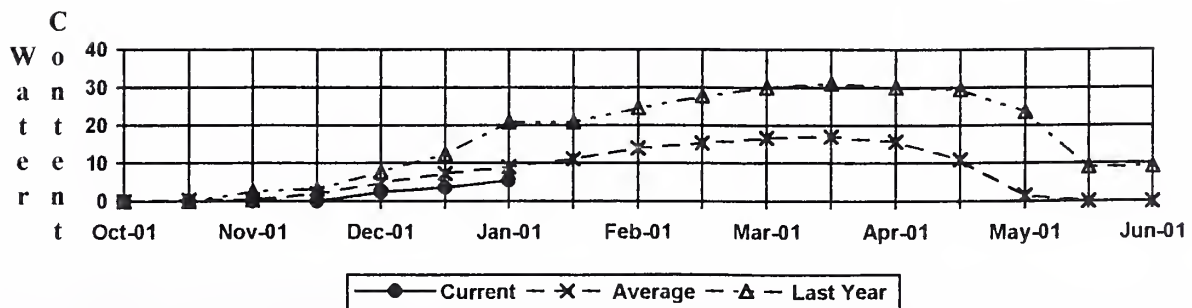
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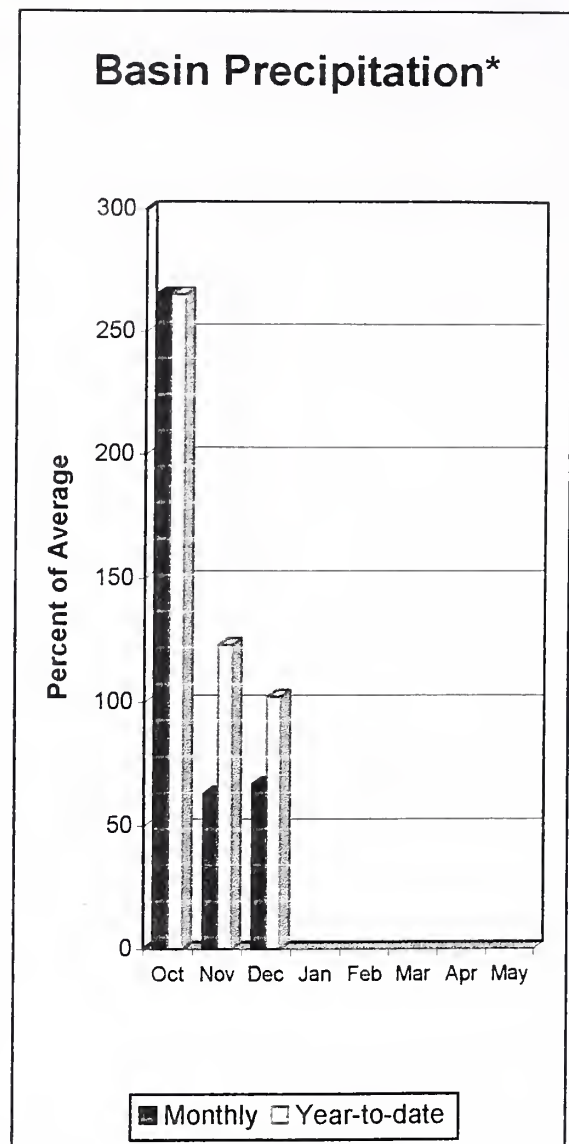
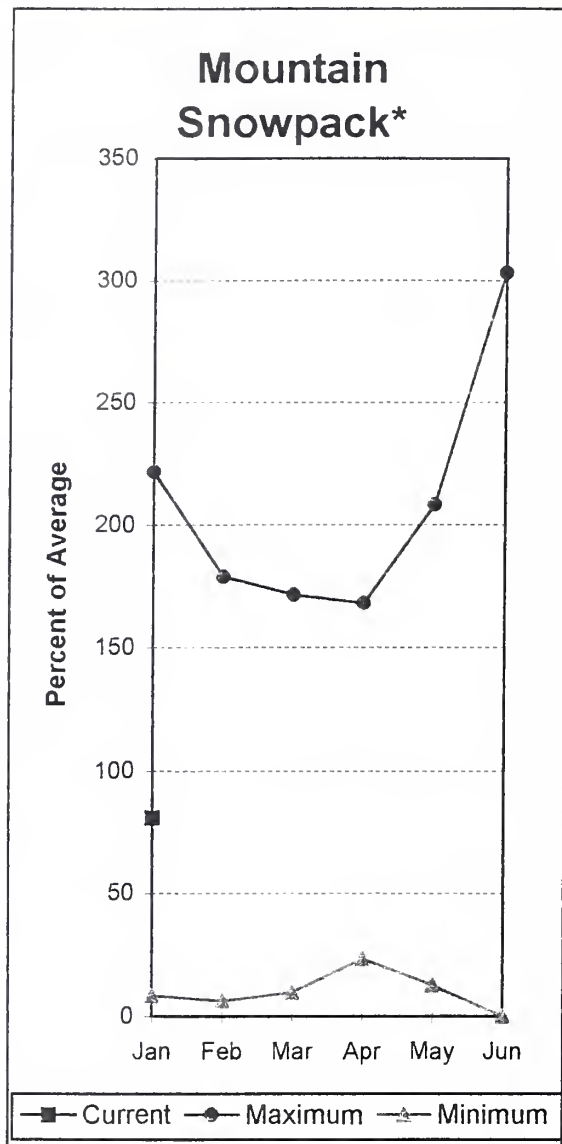
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Pope Ridge SNOTEL Elevation 3540 ft.



Yakima River Basin



*Based on selected stations

January 1 reservoir storage for the five major reservoirs was 728,300 acre feet, or 125% of average. January 1 summer streamflow forecasts are for slightly below average in the Yakima Basin. Forecasts for the Yakima River at Cle Elum, are for 83% of average; Naches River, 90%; the Yakima River near Parker, 85%; Ahtanum Creek, 83%; and the Tieton River, 88%. The Klickitat River near Glenwood is forecast at 100% of average flows this summer. December streamflows within the basin were: the Yakima River near Kiona, 97% of average; the Yakima near Cle Elum, 62%; and the Naches River at 75%. January 1 snowpack was 81% based upon 17 snow courses and SNOTEL readings within the Yakima Basin. Precipitation was 67% of average for December and 102% for the water year-to-date. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Yakima River Basin

Streamflow Forecasts - January 1, 1998

Forecast Point	Forecast Period	<<----- Drier -----		Future Conditions		----- Wetter ----->>		30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
KEECHELUS LAKE INFLOW	APR-JUL	68	90	105	85	120	142	124
	APR-SEP	75	99	115	85	131	155	135
	APR-JUN	64	81	93	85	105	122	109
KACHESS LAKE INFLOW	APR-JUL	54	76	90	81	104	126	111
	APR-SEP	57	80	95	81	110	133	118
	APR-JUN	52	69	80	81	92	108	99
CLE ELUM LAKE INFLOW	APR-JUL	252	314	356	87	398	460	409
	APR-SEP	273	343	390	87	437	507	448
	APR-JUN	222	269	300	87	331	378	345
YAKIMA at Cle Elum	APR-JUN	417	526	600	83	674	783	721
	APR-JUL	465	599	690	83	781	915	832
	APR-SEP	518	662	760	83	858	1002	915
BUMPING LAKE INFLOW	APR-SEP	80	104	120	88	136	160	136
	APR-JUL	74	95	109	88	123	144	124
	APR-JUN	65	81	92	89	103	119	104
AMERICAN RIVER near Nile	APR-SEP	68	86	99	84	112	130	118
	APR-JUL	63	80	92	84	104	121	109
	APR-JUN	56	71	80	87	90	104	92
RIMROCK LAKE INFLOW	APR-SEP	155	188	210	88	232	265	238
	APR-JUL	130	157	176	88	195	222	200
	APR-JUN	108	129	143	88	157	178	162
NACHES near Naches	APR-SEP	540	665	750	90	835	960	832
	APR-JUL	484	601	680	90	759	876	755
	APR-JUN	420	518	585	90	652	750	651
AHTANUM CREEK nr Tampico (2)	APR-SEP	17.0	30	38	83	47	59	46
	APR-JUL	17.8	29	37	88	45	56	42
	APR-JUN	13.5	23	30	83	37	47	36
YAKIMA near Parker	APR-SEP	1206	1500	1700	85	1900	2194	1994
	APR-JUL	1066	1342	1530	85	1718	1994	1805
	APR-JUN	964	1200	1360	85	1520	1756	1597
KLICKITAT near Glenwood	APR-JUN	74	96	110	100	124	146	110
	APR-SEP	95	122	140	100	158	185	140

YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of December					YAKIMA RIVER BASIN Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
KEECHELUS	157.8	123.1	85.6	83.0	YAKIMA RIVER	17	34	81
KACHESS	239.0	152.7	75.9	159.1	AHTANUM CREEK	3	27	55
CLE ELUM	436.9	309.1	182.6	230.2				
BUMPING LAKE	33.7	9.4	7.9	6.3				
RIMROCK	198.0	134.0	93.4	102.1				

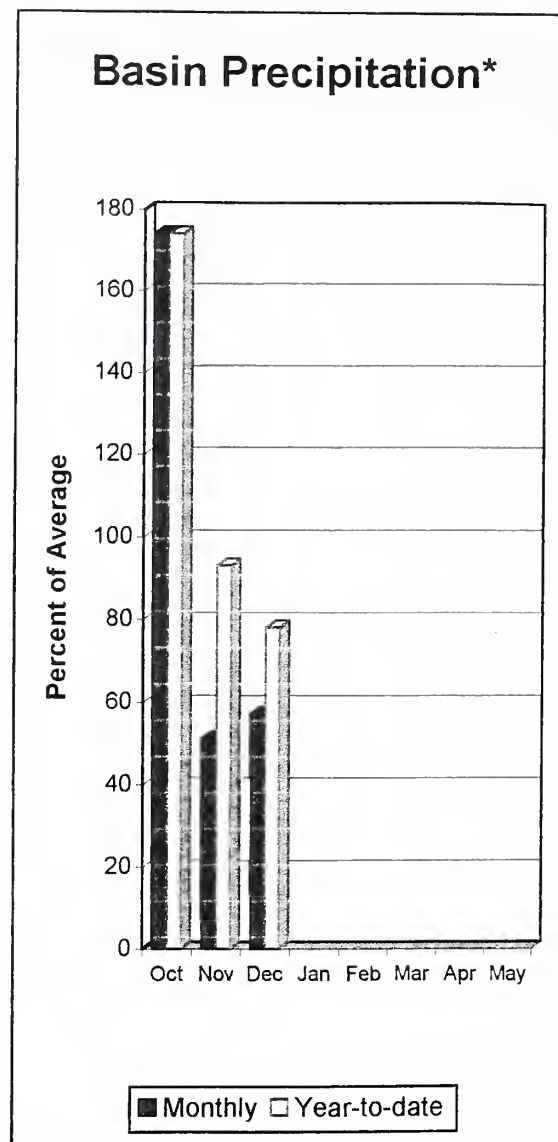
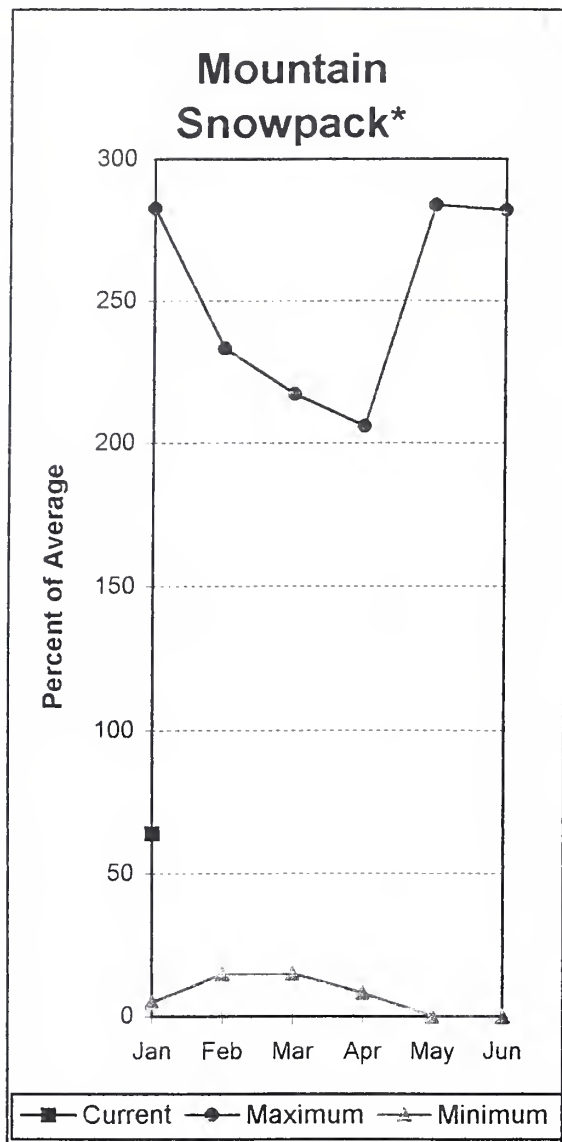
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Walla Walla River Basin



*Based on selected stations

December precipitation was 57% of average, bringing the year-to-date precipitation to 78% of average. January 1 snowpack was at 64% of average. The forecast is for 77% of average streamflow in the Snake River below Lower Granite Dam, for the coming summer; for the Grande Ronde at Troy, 84%; and 86% for Mill Creek. December streamflow was 74% of average for the Walla Walla River; 93% for the Snake River below Lower Granite Dam; and 64% for the Grande Ronde River near Troy. The Touchet SNOTEL site had 8.7 inches of snow-water-equivalent. The average January 1 reading for this site is 12.9 inches. Average temperatures were 2-4 degrees above normal for the area.

For more information contact your local Natural Resources Conservation Service office.

Walla Walla River Basin

Streamflow Forecasts - January 1, 1998

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg.
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
GRANDE RONDE at Troy (1)	MAR-JUL	497	1008	1240	84	1472	1983	1471
	APR-SEP	426	890	1100	84	1310	1774	1312
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	5827	13304	16700	77	20096	27573	21650
	APR-SEP	6582	14984	18800	77	22616	31018	24360
MILL CREEK at Walla Walla	APR-SEP	4.9	10.7	14.7	86	18.7	25	17.1
	APR-JUL	4.6	10.4	14.4	85	18.4	24	16.9
	APR-JUN	4.5	10.3	14.2	85	18.1	24	16.7
SF WALLA WALLA near Milton-Freewater	APR-JUL	32	39	44	83	49	56	53
	APR-SEP	38	46	51	77	56	64	66
COLUMBIA R. at The Dalles (2)	APR-SEP	51456	68928	80800	82	92672	110144	98982
	APR-JUL	44032	58958	69100	82	79242	94168	84760
	APR-JUN	36219	48295	56500	82	64705	76781	68925

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of December

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - January 1, 1998

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of Last Yr Average	
		This Year	Last Year	Avg			Last Yr	Average
					WALLA WALLA RIVER	2	25	64

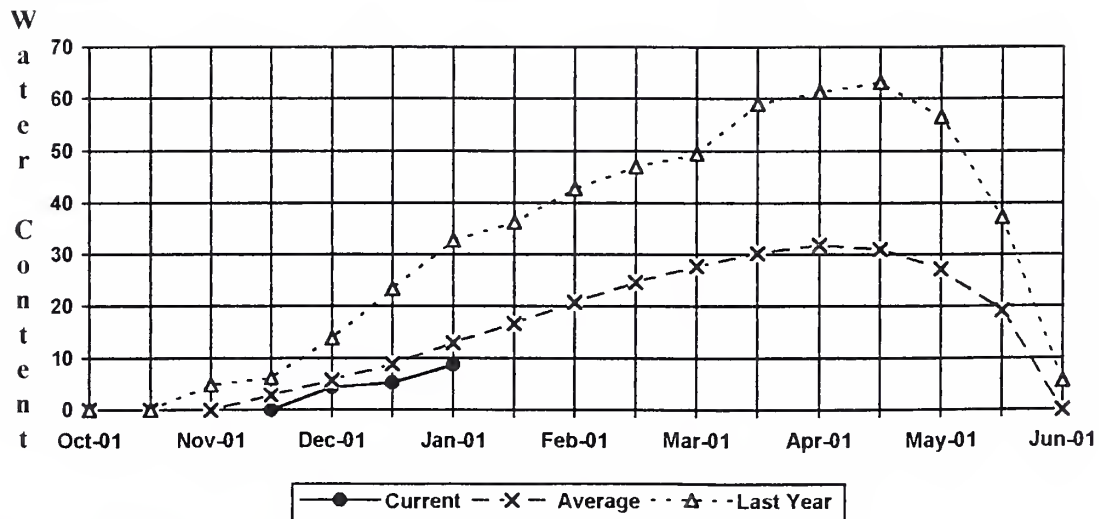
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

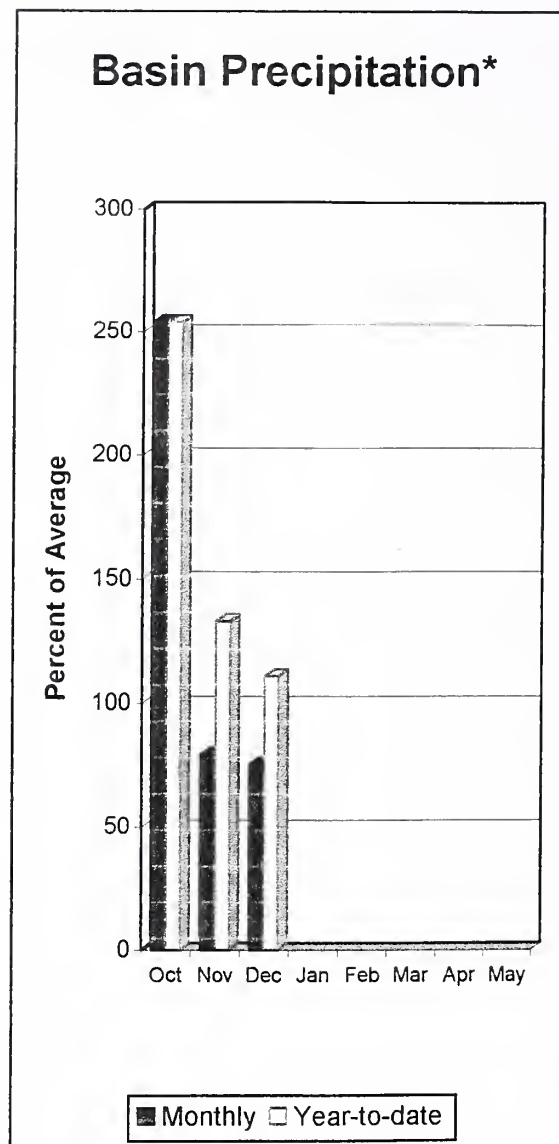
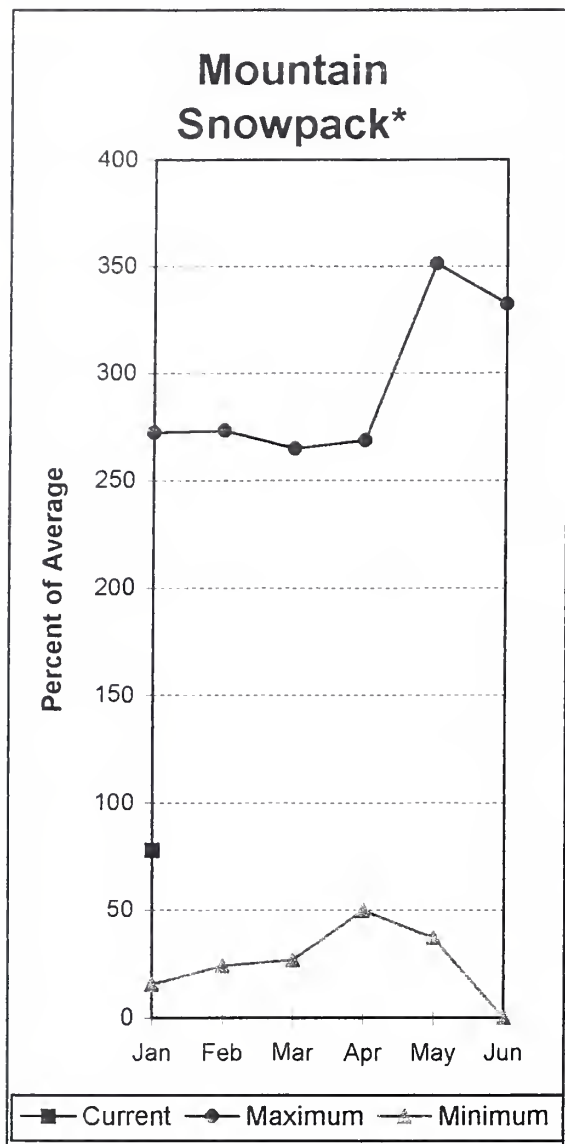
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

Touchet #2 SNOTEL Elevation 5530 ft.



Cowlitz - Lewis River Basins



*Based on selected stations

The forecast for summer runoff in the Lewis River Basin is 90% of average. The Cowlitz River at Castle Rock, is forecast for 95% of average runoff. December streamflow for the Cowlitz River was 68% of average, and 73% for the Lewis River. December precipitation was 75% of average, 111% of average for the water-year. January 1 snow cover for the Cowlitz River was 84%, and the Lewis River was 71% of average. The Paradise Park SNOTEL recorded the most water content for the basin with 21.5 inches of water. Average January 1 water content is 23.6 inches. Average temperatures were slightly above normal during December.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - January 1, 1998

		<<===== Drier =====		Future Conditions		===== Wetter =====>>			
Forecast Point	Forecast Period	Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
LEWIS at Ariel (2)	APR-SEP	764	958	1090	90	1222	1416	1206	
	APR-JUL	635	822	950	90	1078	1265	1053	
	APR-JUN	543	720	840	90	960	1137	935	
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	911	1452	1820	92	2188	2729	1970	
	APR-JUL	805	1278	1600	92	1922	2395	1731	
	APR-JUN	679	1084	1360	92	1636	2041	1477	
COWLITZ R. at Castle Rock (2)	APR-SEP	1763	2160	2430	91	2700	3097	2667	
	APR-JUL	1538	1885	2120	91	2355	2702	2325	
	APR-JUN	1315	1613	1815	91	2017	2315	1995	
KLICKITAT near Glenwood	APR-JUN	74	96	110	100	124	146	110	
	APR-SEP	95	122	140	100	158	185	140	

COWLITZ - LEWIS RIVER BASINS					COWLITZ - LEWIS RIVER BASINS			
Reservoir Storage (1000 AF) - End of December					Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					LEWIS RIVER	4	24	71
					COWLITZ RIVER	6	39	84

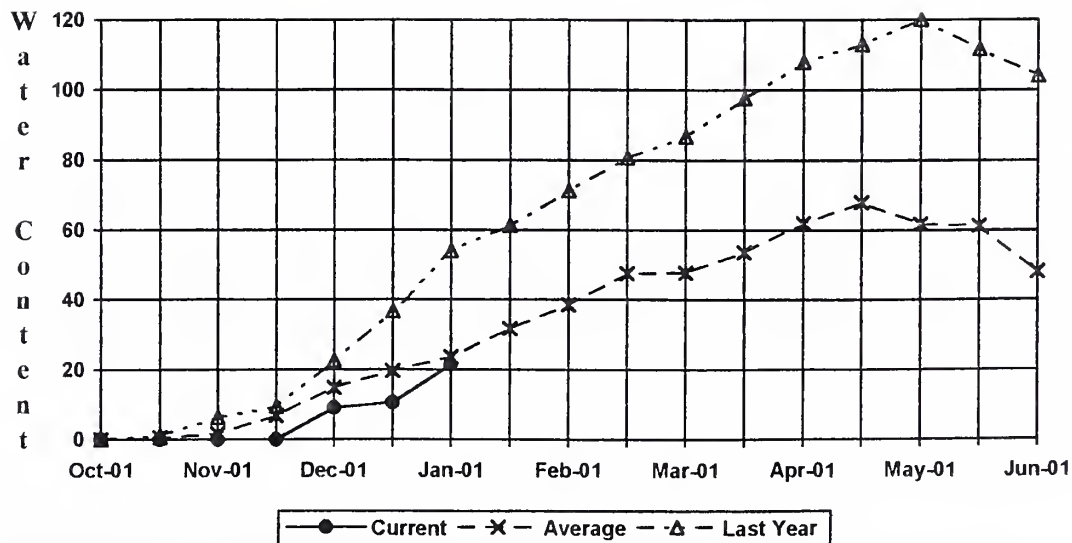
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

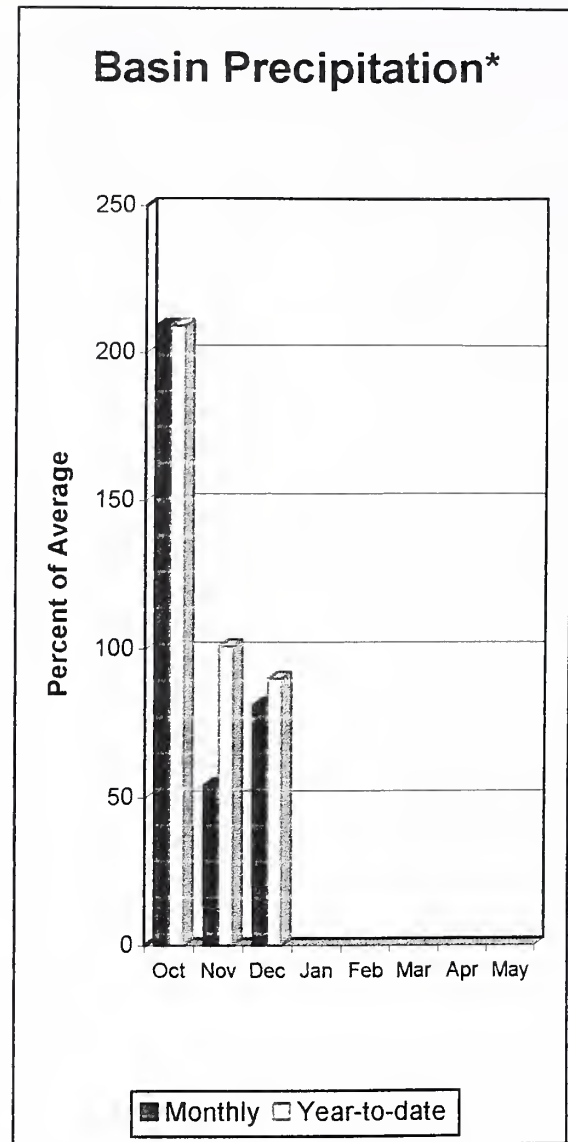
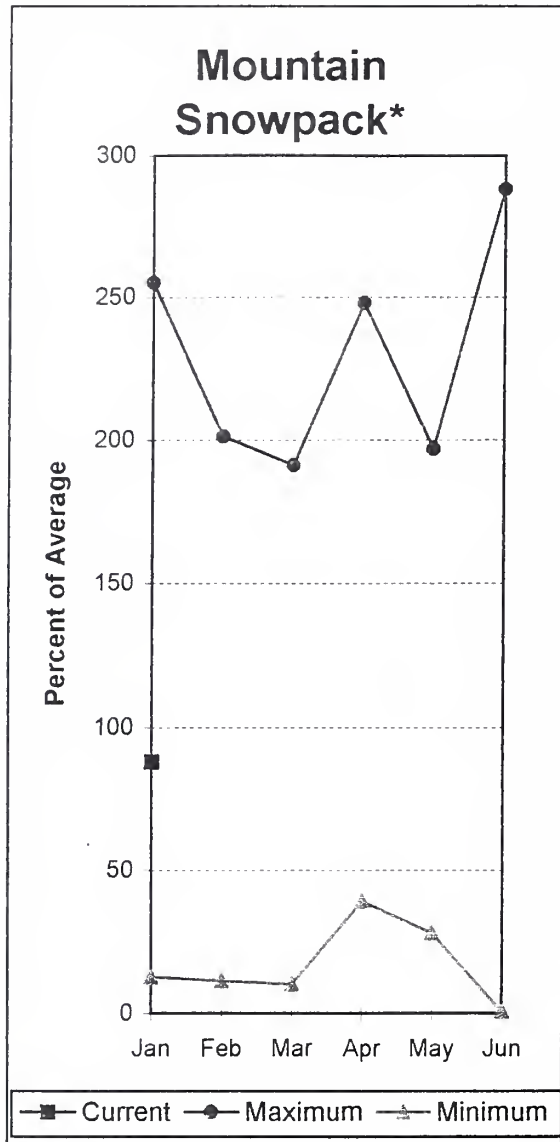
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Paradise SNOTEL Elevation 5120 ft.



White - Green River Basins



*Based on selected stations

Summer runoff is forecast to be 80% of average for the Green River. The White and Nisqually rivers should also experience near normal flows this summer. January 1 snowpack was 99% of average in the White River Basin; and 76% in the Green River Basin. Water content on January 1 at the Morse Lake SNOTEL, at an elevation of 5,400 feet, was 21 inches. This site has a January 1 average of 19.1 inches. December precipitation was 81% of average, bringing the water year-to-date to 90% of average for the basins.

For more information contact your local Natural Resources Conservation Service office.

White - Green River Basins

Streamflow Forecasts - January 1, 1998

		<<----- Drier -----		Future Conditions -----		Wetter ----->>		
Forecast Point	Forecast Period	Chance Of Exceeding *						
		90%	70%	50% (Most Probable)		30%	10%	30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
GREEN RIVER below Howard Hanson Dam	APR-JUL	136	178	206	80	234	276	257
	APR-SEP	146	195	229	80	263	312	285
	APR-JUN	112	157	188	80	219	264	234

WHITE - GREEN RIVER BASINS Reservoir Storage (1000 AF) - End of December				WHITE - GREEN RIVER BASINS Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of Last Yr Average
		This Year	Last Year	Avg			
					WHITE RIVER	3	43 99
					GREEN RIVER	7	29 76

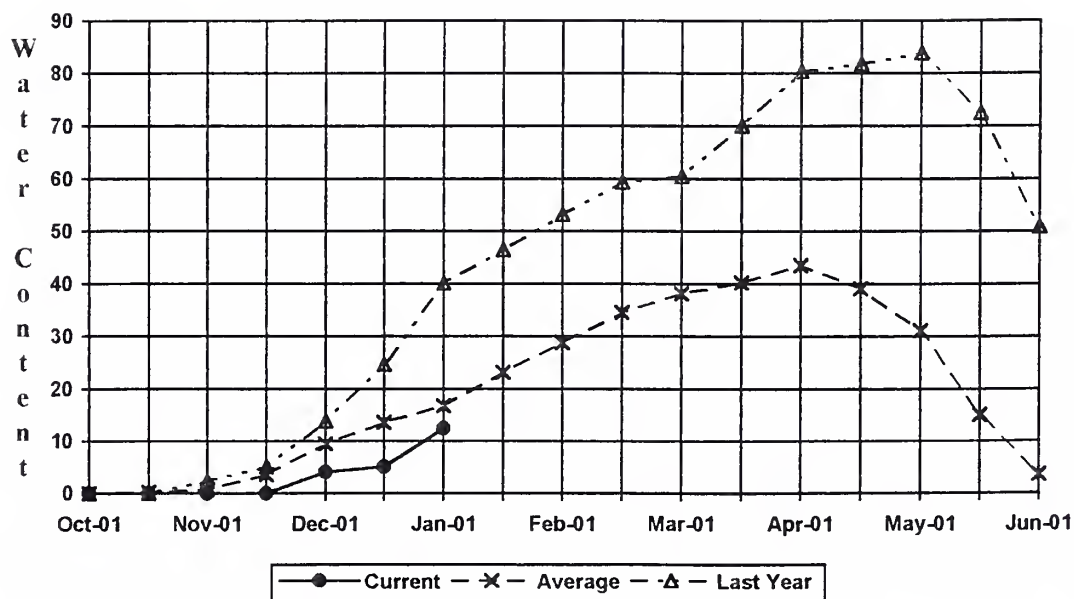
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The average is computed for the 1961-1990 base period.

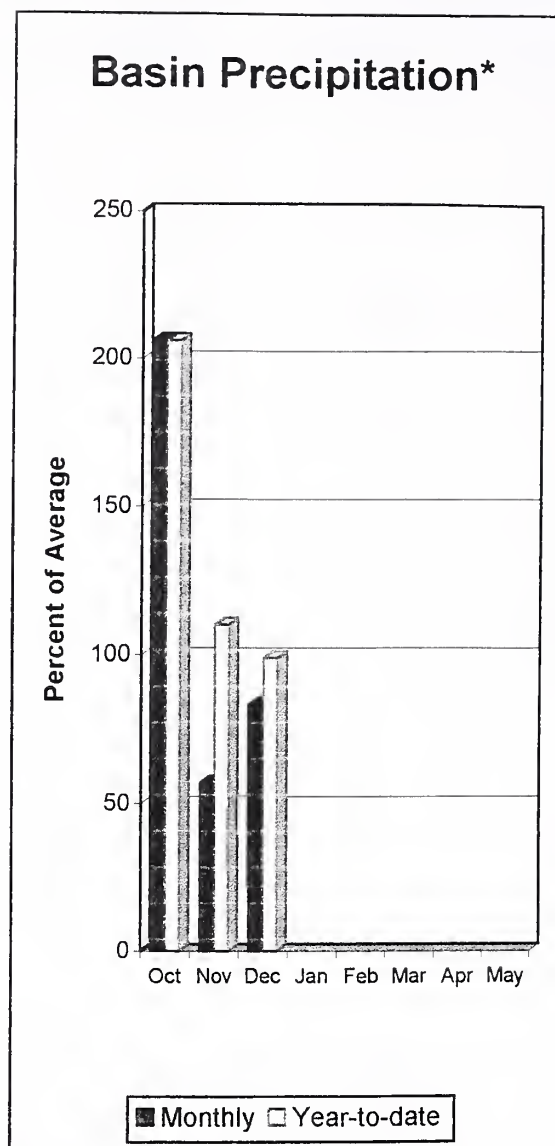
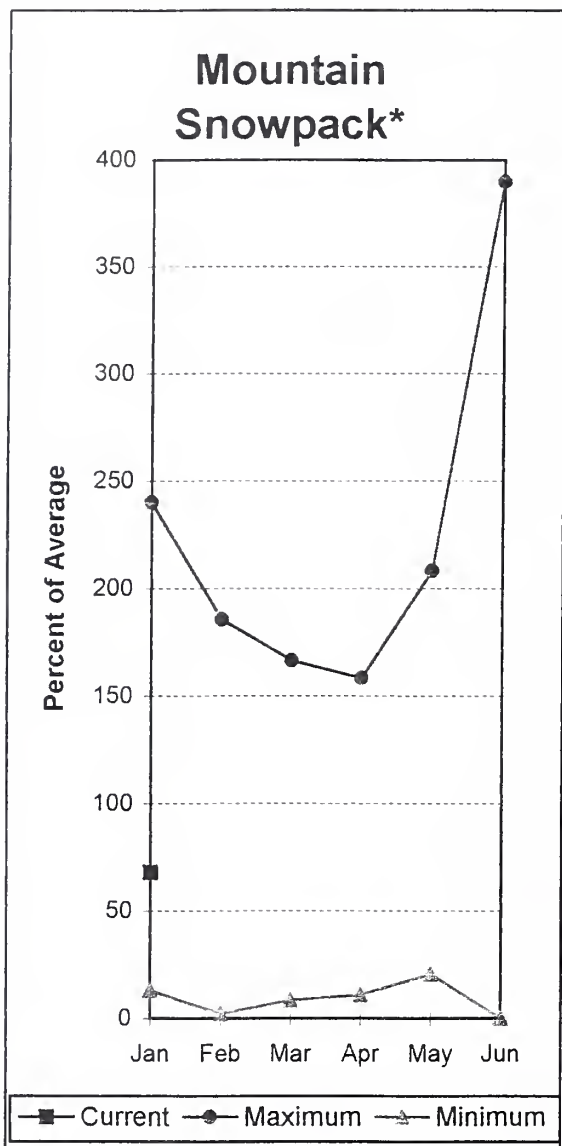
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Stampede Pass SNOTEL Elevation 3860 ft.



Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 68% for the Cedar River near Cedar Falls; 57% for the Rex River; 75% for the South Fork of the Tolt River; and 68% for the Cedar River at Cedar Falls. Basin-wide precipitation for December was 83% of average, bringing water-year-to-date to 99% of average. January 1 snow cover in the Cedar River Basin was 82%; the Tolt River Basin was 54%; the Snoqualmie River Basin was 65%; and the Skykomish River Basin was 72% of average. Stevens Pass SNOTEL, at 4,070 feet, had 12.2 inches of water content. Average January 1 water content is 15.3 inches. December temperatures were near normal.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - January 1, 1998

		<<----- Drier ----- Future Conditions ----- Wetter ----->>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
CEDAR near Cedar Falls	APR-JUL	24	40	51	67	63	79	77
	APR-SEP	28	45	57	68	69	86	94
	APR-JUN	23	36	44	65	53	66	68
REX near Cedar Falls	APR-JUL	4.7	11.3	15.7	58	20	27	27
	APR-SEP	5.6	12.6	17.3	57	22	29	30
	APR-JUN	4.9	10.3	13.9	57	17.5	23	25
CEDAR RIVER at Cedar Falls	APR-JUL	9.5	36	54	66	72	99	82
	APR-SEP	9.1	38	57	68	76	105	83
	APR-JUN	21	43	58	72	73	95	80
SOUTH FORK TOLT near Index	APR-JUL	7.0	9.2	10.7	70	12.2	14.4	15.2
	APR-SEP	9.0	11.6	13.3	75	15.0	17.6	17.9
	APR-JUN	6.8	8.7	10.0	76	11.3	13.2	13.1

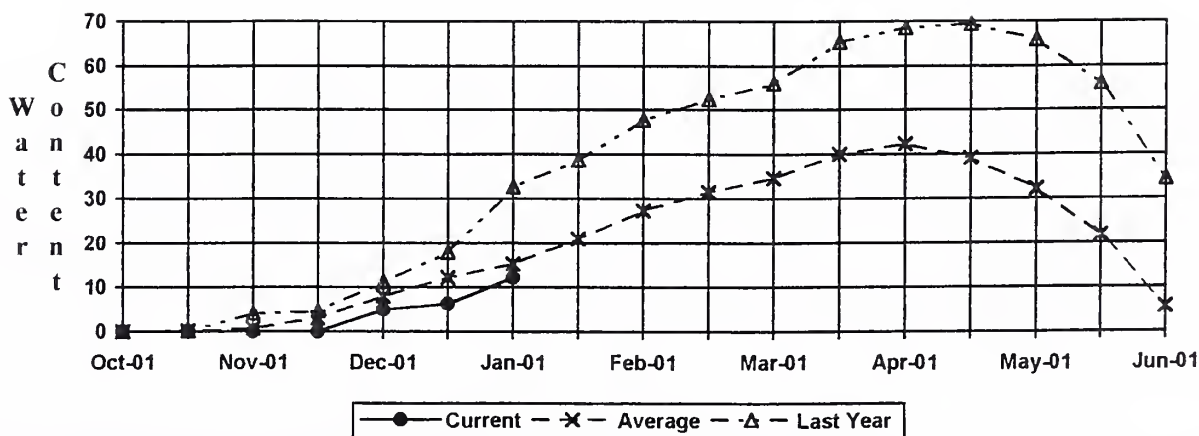
CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of December					CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					CEDAR RIVER	4	25	82
					TOLT RIVER	2	37	54
					SNOQUALMIE RIVER	5	33	65
					SKYKOMISH RIVER	3	35	72

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

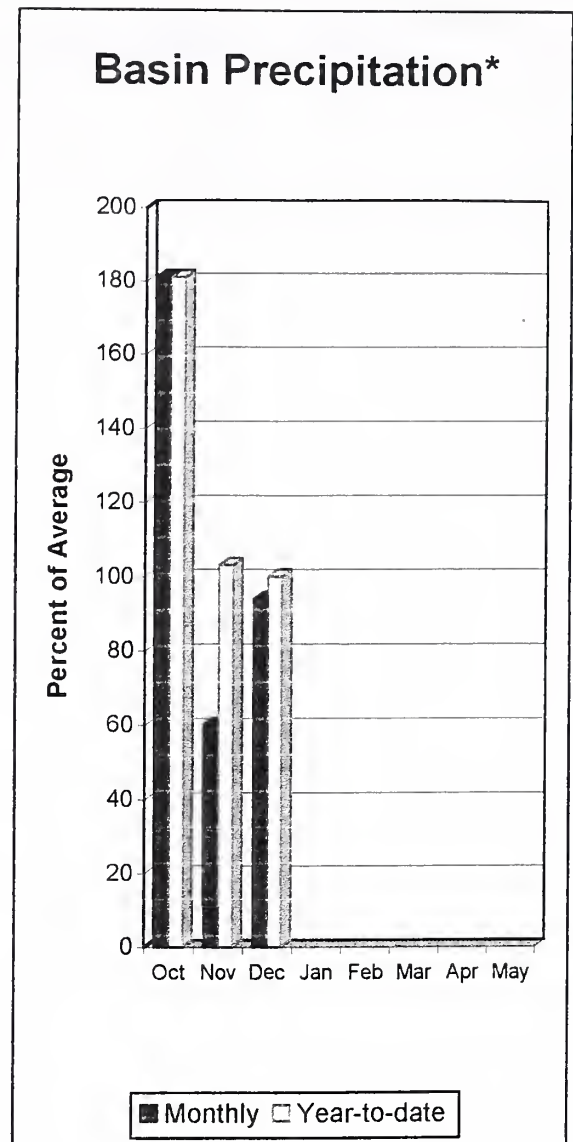
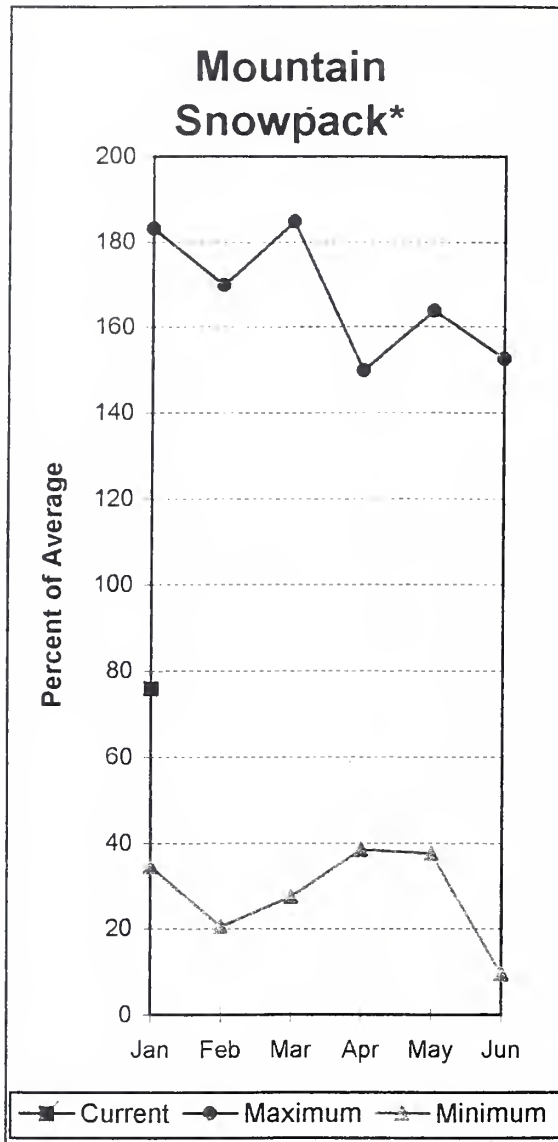
The average is computed for the 1961-1990 base period.

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Stevens Pass SNOTEL Elevation 4070 ft.



North Puget Sound River Basins



*Based on selected stations

Forecast for the Skagit River streamflow is for 90% of average for the spring and summer period. December streamflow in the Skagit River was 63% of average. Other forecast points included the Baker River at 85%; and Thunder Creek at 85% of average. Basin-wide precipitation for December was 94% of average, bringing water-year-to-date to 100% of average. January 1 snow cover in the Skagit River Basin was 97%; the Baker River Basin was 84%; and the Nooksack River Basin was 46% of average. Rainy Pass SNOTEL, at 4,780 feet, had 13.77 inches of water content. Average January 1 water content is 15.4 inches. January 1 Skagit River reservoir storage was 148% average and 82% of capacity. Average December temperatures were above normal for the basin.

For more information contact your local Natural Resources Conservation Service office.

North Puget Sound River Basins

Streamflow Forecasts - January 1, 1998

		<<----- Drier ----- Future Conditions ----- Wetter ----->>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
THUNDER CREEK near Newhalem	APR-JUL	159	179	192	84	205	225	230
	APR-SEP	241	264	280	85	296	319	328
	APR-JUN	95	116	130	87	144	165	149
=====								
SKAGIT near Newhalem (2)	APR-SEP	1711	1870	1979	90	2088	2247	2191
	APR-JUL	1430	1562	1651	88	1740	1872	1879
	APR-JUN	1125	1232	1305	90	1378	1485	1455
=====								
BAKER RIVER near Concrete	APR-JUL	539	638	705	84	772	871	836
	APR-SEP	714	825	901	85	977	1088	1064
	APR-JUN	412	490	543	89	596	674	611

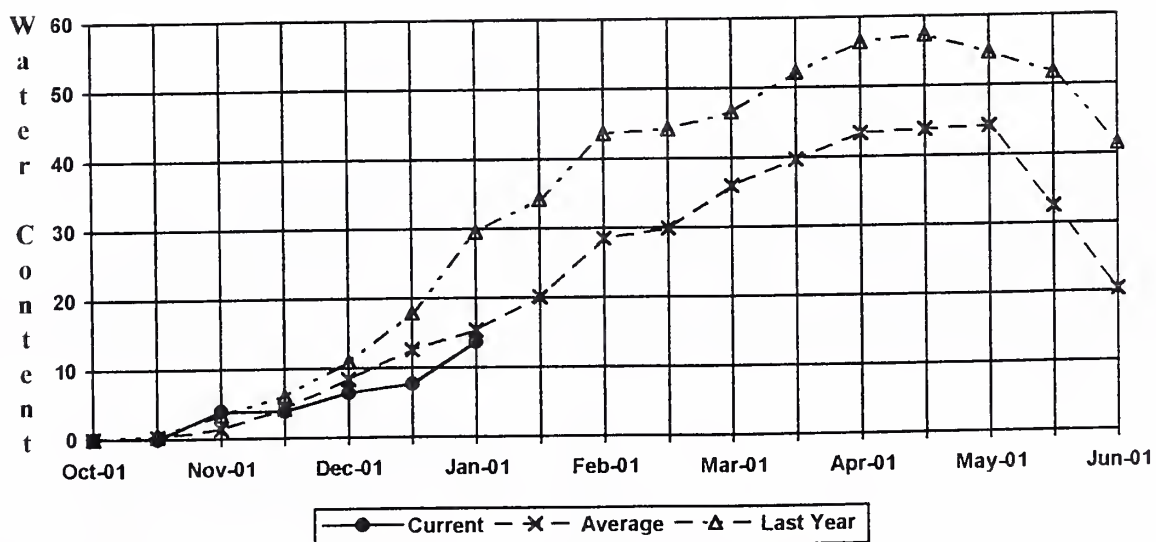
NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of December					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROSS	1404.1	1157.0	1113.5	783.9	SKAGIT RIVER	3	56	97
DIABLO RESERVOIR	90.6	85.9	84.5	---	BAKER RIVER	5	35	84
GORGE RESERVOIR	9.8	7.8	7.8	---	NOOKSACK RIVER	2	31	46

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

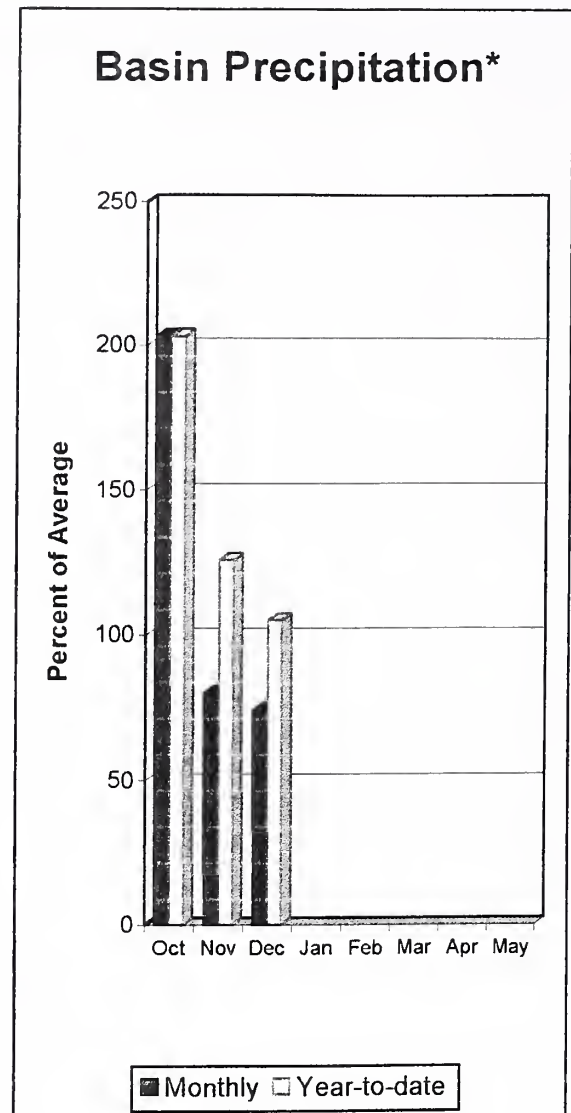
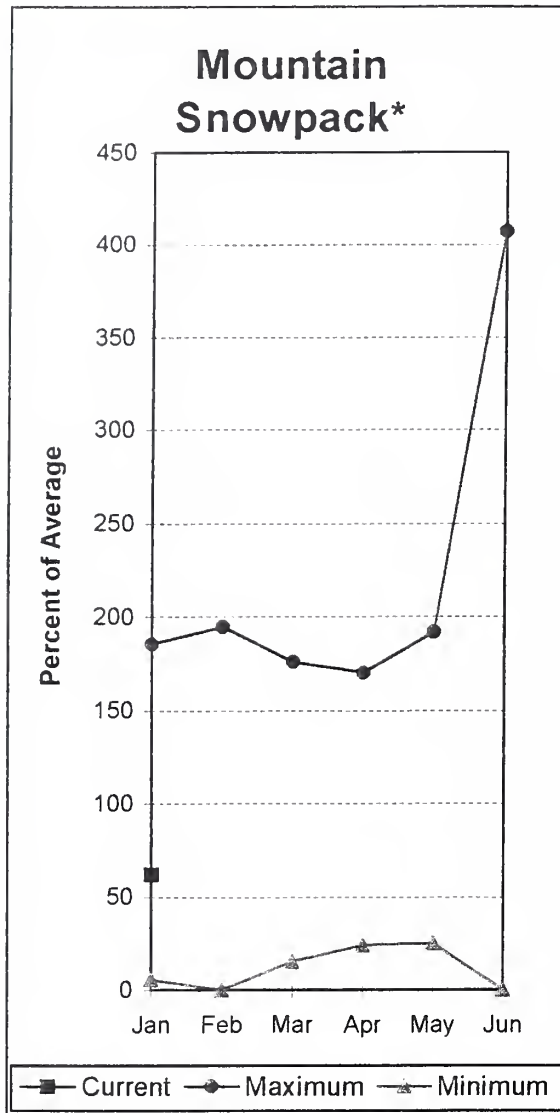
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Rainy Pass SNOTEL Elevation 4780 ft.



Olympic Peninsula River Basins



*Based on selected stations

January forecasts of runoff for streamflow in the Dungeness River Basin are 90% of average and 80% of average for the Elwha River. The Big Quilcene and Wynoochee rivers can expect near average runoff this summer also. December precipitation was 74% of average. Precipitation has accumulated at 105% of average for the water year. December precipitation at Quillayute was 13.6 inches. The thirty-year average for January 1 is 14.62 inches. Average January 1 snow cover in the Olympic Basin was at 62% of average. The Mount Crag SNOTEL near Quilcene had 7 inches of snow-water-equivalent on January 1. Average for this site is 11.3 inches. Temperatures were 1-2 degrees below average for the month.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - January 1, 1998

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
=====								
DUNGENESS near Sequim	APR-SEP	97	121	138	90	155	179	153
	APR-JUL	79	99	113	90	127	147	125
	APR-JUN	60	75	85	90	95	110	94
=====								
ELWHA near Port Angeles	APR-SEP	263	348	406	80	464	549	510
	APR-JUL	225	293	339	80	385	453	424

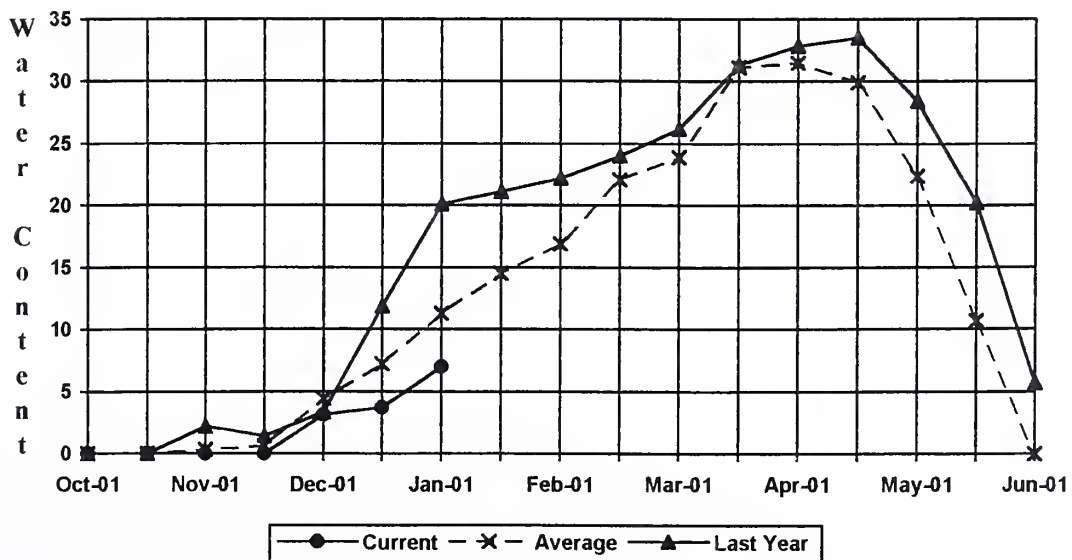
OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of December					OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - January 1, 1998			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					ELWHA RIVER	0	0	0
					MORSE CREEK	0	0	0
					DUNGENESS RIVER	0	0	0
					QUILCENE RIVER	1	35	62
					WYNOOCHEE RIVER	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Mount Crag SNOTEL Elevation 4050 ft.



Issued by

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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

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State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County
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*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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